

Attorney Docket No. IMMR-039/01US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Louis B. ROSENBERG *et al.*

Serial No.: 09/756,617

Examiner: Paul A. Bell

Filed: January 3, 2001

Art Unit: 2675

Confirmation No. 7226

For: **PROVIDING FORCE FEEDBACK TO A USER OF AN INTERFACE DEVICE  
BASED ON INTERACTIONS OF A USER-CONTROLLED CURSOR IN A  
GRAPHICAL USER INTERFACE**

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Arlington, VA 22202

**INFORMATION DISCLOSURE STATEMENT TRANSMITTAL**

Enclosed is an Information Disclosure Statement and accompanying Form PTO/SB/08A for the above-identified patent application.

- ☒ In accordance with 37 C.F.R. §1.97(b), no additional fee for submission of the IDS is required.
- ☐ In accordance with 37 C.F.R. §1.97(c), also enclosed is:
  - ☐ the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p); or
  - ☐ a statement as specified in 37 C.F.R. §1.97(e).
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The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

Dated: September 14, 2004

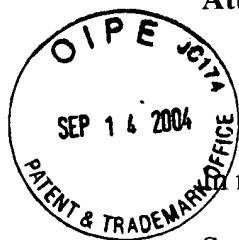
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Respectfully submitted,  
**COOLEY GODWARD LLP**

By:

  
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Erik B. Milch  
Reg. No. 42,887

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



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**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §1.97(b)**

In accordance with the duty of disclosure set forth in 37 C.F.R. §1.56,  
Applicant(s) hereby submits the following information in conformance with 37 C.F.R.  
§§1.97 and 1.98.

- ☒ Pursuant to 37 C.F.R. §1.98, a copy of each document cited in the attached Form PTO/SB/08A (1 of 2) is provided on the enclosed CD.
- ☒ No copies of the publications listed on the attached Form PTO/SB/08A (2 of 2) are being provided pursuant to 37 C.F.R. §1.98(d) because the publications were previously cited by or submitted to the Office in prior Application Serial Nos. 08/571,606 (now U.S. Patent No. 6,219,032), and/or 08/566,282 (now U.S. Patent No. 5,734,373) to which the above-identified application claims priority under 35 U.S.C. §120.
- ☐ No copies of any U.S. patents or U.S. patent application publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98 because this application was filed after June 30, 2003.
- ☐ Publication(s) \_\_\_ listed on the attached Form PTO/SB/08A were cited in a foreign search or examination report corresponding to \_\_\_ application serial no. \_\_\_ and mailed on \_\_\_.
- ☐ Enclosed is a copy of a non-English publication(s) \_\_\_. Pursuant to §609 of the M.P.E.P., Applicant submits the attached foreign search or examination report, which cites such non-English language publication(s).

- ☐ Enclosed is a copy of a non-English publication(s) \_\_\_\_\_. English language publication \_\_\_\_ (copy enclosed) claims priority from this non-English publication.
- ☐ Enclosed is an explanation of non-English publication(s) \_\_\_\_ for which an English translation is not available.
- ☐ Enclosed is an English translation of non-English publication(s) \_\_\_\_ cited in the attached Form PTO/SB/08A.
- ☐ Enclosed is a copy of pending patent Application Serial No. \_\_\_\_\_.

This Information Disclosure Statement is filed within any one of the following time periods:

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- ☐ within three months from the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in this international application;
- ☐ before the mailing date of a first office action on the merits; or
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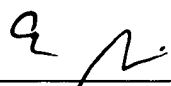
It is respectfully requested that the Examiner consider the above-noted information and return an initialed copy of the attached Form PTO/SB/08A to the undersigned.

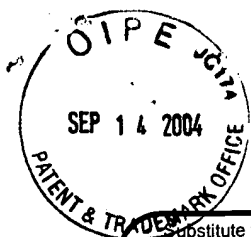
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(1 of 2)

PTO/SB/08A (10-01)

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 1 of 3

**Complete if Known**

Application Number	09/756,617
Filing Date	January 3, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A Bell
Attorney Docket Number	IMMR039/01US

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
		6,422,941	7/23/2002	Thorner et al.	
		6,160,489	12/12/2000	Perry et al.	
		6,111,577	8/29/2000	Zilles et al.	
		5,690,582	11/25/1997	Ulrich et al.	
		5,575,761	11/19/1996	Hajianpour	
		5,437,607	8/1/1995	Taylor	
		5,436,622	7/25/1995	Gutman et al.	
		5,283,970	2/8/1994	Aigner	
		5,186,695	2/16/1993	Mangseth et al.	
		5,175,459	12/29/1992	Daniel et al.	
		5,165,897	11/24/1992	Johnson	
		5,022,384	6/11/1991	Freels	
		4,885,565	12/5/1989	Embach	
		4,484,191	11/20/1984	Vavra	
		4,464,117	8/7/1984	Foerst	
		4,333,070	6/1/1982	Barnes	
		4,262,549	4/21/1981	Schwellenbach	
		4,127,752	11/28/1978	Lowthorp	
		2,972,140	2/14/1961	Hirsch	

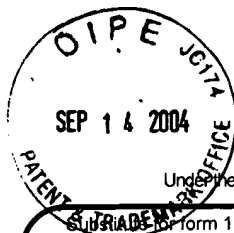
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		JP	H2-185278		7/19/1990	Taito Corporation	
		JP	H4-8381		1/13/1992	Epoch Co. and Key- Planning Co.	
		JP	H7-24147		1/27/1995	Sega Corporation	
		JP	H5-192449		8/3/1993	Taito Corporation	

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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kind Codes of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet **2** of **3****Complete if Known**

Application Number	09/756,617
Filing Date	January 3, 2001
First Named Inventor	Louis B. Rosenberg
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**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

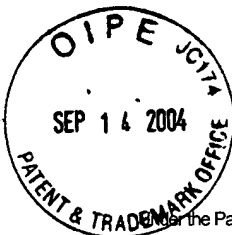
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.
		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
		WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.
		BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.
		JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory</i> , AAMRL-TR-90-039, August, 1990.
		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
		AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," <i>DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1</i> , ASME 1994.
		GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995.
		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.
		OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995.
		KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.
		LAKE, "Cyberman from Logitech," at <a href="http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html">http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html</a> , 1994.
		"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).

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-----------------------	--------------------

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 3 of 3

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Application Number	09/756,617
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First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A Bell
Attorney Docket Number	IMMR039/01US

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages).
		SCANNELL, "Taking a Joystick Ride," <i>Computer Currents</i> , Boston Edition, Vol. 9, No. 11, November 1994
		YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," <i>Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems</i> , Raleigh, NC, July 7-10, 1992
		NOLL, "Man-Machine Tactile," <i>SID Journal</i> , July/August 1972 Issue.
		ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," <i>Ph.D. Dissertation</i> , Stanford University, June 1994.

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Sheet 1 of 13

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Filing Date January 3, 2001

First Named Inventor Louis B. Rosenberg

Art Unit 2675

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		Number Kind Code <sup>2</sup> (if known)			
		6,088,019	07/2000	Rosenberg et al.	
		6,078,308	06/2000	Rosenberg et al.	
		6,061,004	05/2000	Rosenberg et al.	
		6,057,828	05/2000	Rosenberg et al.	
		6,028,593	02/2000	Rosenberg et al.	
		6,020,876	02/2000	Rosenberg et al.	
		5,956,484	09/1999	Rosenberg et al.	
		5,889,670	03/1999	Schuler et al.	
		5,877,748	03/1999	Redlich	
		5,844,392	12/1998	Peurach et al.	
		5,825,308	10/1998	Rosenberg	
		5,818,423	10/1998	Pugliese et al.	
		5,808,601	09/1998	Leah et al.	
		5,805,165	09/1998	Thorne, III et al.	
		5,805,140	09/1998	Rosenberg et al.	
		5,790,108	08/1998	Salcudean et al.	
		5,786,818	07/1998	Brewer et al.	
		5,784,052	07/1998	Keyson	
		5,781,172	07/1998	Engel et al.	
		5,771,037	06/1998	Jackson	
		5,767,839	06/1998	Rosenberg	
		5,757,358	05/1998	Osga	
		5,754,023	05/1998	Roston et al.	
		5,745,715	04/1998	Pickover et al.	
		5,742,278	04/1998	Chen et al.	
		5,739,811	04/1998	Rosenberg et al.	
		5,736,978	04/1998	Hasser et al.	
		5,734,373	03/1998	Rosenberg et al.	
		5,731,804	03/1998	Rosenberg	
		5,721,566	02/1998	Rosenberg et al.	
		5,714,978	02/1998	Yamanaka et al.	
		5,709,219	01/1998	Chen et al.	
		5,691,747	11/1997	Amano	
		5,666,473	9/1997	Wallace	

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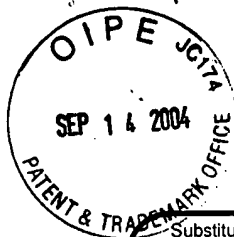
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		Number Kind Code <sup>2</sup> (if known)			
		5,666,138	09/1997	Culver	
		5,643,087	07/1997	Marcus et al.	
		5,642,469	06/1997	Hannaford et al.	
		5,631,861	05/1997	Kramer	
		5,629,594	05/1997	Jacobus et al.	
		5,625,576	04/1997	Massie et al.	
		5,623,642	04/1997	Katz et al.	
		5,623,582	04/1997	Rosenberg	
		5,619,180	04/1997	Massimino et al.	
		5,596,347	01/1997	Robertson et al.	
		5,591,924	01/1997	Hilton	
		5,589,854	06/1995	Tsai	
		5,589,828	12/1996	Armstrong	
		5,587,937	12/1996	Massie et al.	
		5,583,478	12/1996	Renzi	
		5,577,981	11/1996	Jarvik	
		5,576,727	11/1996	Rosenberg et al.	
		5,570,111	10/1996	Barrett et al.	
		5,565,888	10/1996	Selker	
		5,565,887	10/1996	McCambridge et al.	
		5,565,840	10/1996	Throner et al.	
		5,551,701	09/1996	Bouton et al.	
		5,530,455	06/1996	Gillick et al.	
		5,526,480	06/1996	Gibson	
		5,513,100	04/1996	Parker	
		5,512,919	04/1996	Araki	
		5,482,051	01/1996	Reddy et al.	
		5,471,571	11/1995	Smith et al.	
		5,467,763	11/1995	McMahon et al.	
		5,459,382	10/1995	Jacobus et al.	
		5,451,924	09/1995	Massimino et al.	
		5,445,166	08/1995	Taylor	
		5,436,640	07/1995	Reeves	
		5,436,638	07/1995	Bolas et al.	

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet **3** of **13****Complete if Known**

Application Number	09/756,617
Filing Date	January 3, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A Bell
Attorney Docket Number	IMMR039/01US

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
		5,436,542	07/1995	Petelin et al.	
		5,435,554	07/1995	Lipson	
		5,429,140	07/1995	Burdea et al.	
		5,428,748	06/1995	Davidson et al.	
		5,417,696	05/1995	Kashuba et al.	
		5,414,337	05/1995	Schuler	
		5,412,880	05/1995	Raab	
		5,405,152	04/1995	Katanics et al.	
		5,402,582	04/1995	Raab	
		5,398,044	03/1995	Hill	
		5,397,323	03/1995	Taylor et al.	
		5,397,232	03/1995	Taylor et al.	
		5,396,267	03/1995	Bouton	
		5,396,266	03/1995	Brimhall	
		5,389,865	02/1995	Jacobus et al.	
		5,386,507	01/1995	Teig et al.	
		5,384,460	01/1995	Tseng	
		5,379,663	01/1995	Hara	
		5,374,942	12/1994	Gilligan et al.	
		5,355,148	10/1994	Anderson	
		5,354,162	10/1994	Burdea et al.	
		5,351,692	10/1994	Dow et al.	
		5,313,230	05/1994	Venolia et al.	
		5,298,890	03/1994	Kanamaru et al.	
		5,296,871	03/1994	Paley	
		5,296,846	03/1994	Ledley	
		5,289,273	02/1994	Lang	
		5,275,565	01/1994	Moncrief	
		5,264,768	11/1993	Gregory	
		5,262,777	11/1993	Low et al.	
		5,259,894	11/1993	Sampson	
		5,259,120	11/1993	Chapman et al.	
		5,251,156	10/1993	Heier et al.	
		5,251,127	10/1993	Raab	

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**INFORMATION DISCLOSURE  
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Sheet **4** of **13****Complete if Known**Application Number **09/756,617**Filing Date **January 3, 2001**First Named Inventor **Louis B. Rosenberg**Art Unit **2675**Examiner Name **Paul A Bell**Attorney Docket Number **IMMR039/01US****U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
		5,243,266	09/1993	Kasagami et al.	
		5,235,868	08/1993	Culver	
		5,230,623	07/1993	Guthrie et al.	
		5,228,356	07/1993	Chuang	
		5,223,776	06/1993	Radke et al.	
		5,220,260	06/1993	Schuler	
		5,209,131	05/1993	Baxter	
		5,204,824	04/1993	Fujimaki	
		5,195,179	03/1993	Tokunaga	
		5,189,806	03/1993	McMurtry et al.	
		5,187,874	02/1993	Takahashi et al.	
		5,186,629	02/1993	Rohen	
		5,185,561	02/1993	Good et al.	
		5,184,319	02/1993	Kramer	
		5,184,306	02/1993	Erdman et al.	
		5,182,557	01/1993	Lang	
		5,181,181	01/1993	Glynn	
		5,178,012	01/1993	Culp	
		5,148,377	09/1992	McDonald	
		5,146,566	09/1992	Hollis, Jr. et al.	
		5,143,505	09/1992	Burdea et al.	
		5,142,931	09/1992	Menahem	
		5,142,506	08/1992	Edwards	
		5,139,261	08/1992	Openiano	
		5,132,672	07/1992	Clark	
		5,131,844	07/1992	Marinaccio et al.	
		5,128,671	07/1992	Thomas, Jr.	
		5,126,948	06/1992	Mitchell et al.	
		5,116,051	05/1992	Moncrief et al.	
		5,107,262	04/1992	Cadoz et al.	
		5,107,080	04/1992	Rosen	
		5,103,404	04/1992	McIntosh	
		5,095,303	03/1992	Clark et al.	
		5,088,055	02/1992	Oyama	

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet **5** of **13****Complete if Known**

Application Number	09/756,617
Filing Date	January 3, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A Bell
Attorney Docket Number	IMMR039/01US

**U.S. PATENT DOCUMENTS**

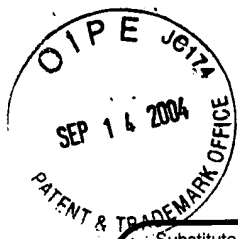
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
		5,088,046	02/1992	McMurtry et al.	
		5,080,377	01/1992	Stamper et al.	
		5,072,361	12/1991	Davis et al.	
		5,065,145	11/1991	Purcell	
		5,050,608	09/1991	Watanabe et al.	
		5,044,956	09/1991	Behensky et al.	
		5,040,306	08/1991	McMurtry et al.	
		5,007,300	04/1991	Siva	
		5,007,085	04/1991	Greanias et al.	
		4,983,786	01/1991	Stevens et al.	
		4,982,618	01/1991	Culver	
		4,982,504	01/1991	Soderberg et al.	
		4,962,591	10/1990	Zeller et al.	
		4,961,267	10/1990	Herzog	
		4,961,138	10/1990	Gorniak	
		4,945,501	07/1990	Bell et al.	
		4,945,305	07/1990	Blood	
		4,942,545	07/1990	Sapia	
		4,935,728	06/1990	Kley	
		4,907,973	03/1990	Hon	
		4,907,970	03/1990	Meenen, Jr.	
		4,891,889	01/1990	Tomelleri	
		4,888,877	12/1989	Enderle et al.	
		4,879,556	11/1989	Duimel	
		4,868,549	09/1989	Affinito et al.	
		4,849,692	07/1989	Blood	
		4,839,838	06/1989	LaBiche et al.	
		4,819,195	04/1989	Bell et al.	
		4,811,608	03/1989	Hilton	
		4,803,413	02/1989	Kendig et al.	
		4,800,721	01/1989	Cemenska et al.	
		4,798,919	01/1989	Miessler et al.	
		4,791,934	12/1988	Brunnett	
		4,787,051	11/1988	Olson	

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Sheet **6** of **13****Complete if Known**

Application Number	09/756,617
Filing Date	January 3, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A Bell
Attorney Docket Number	IMMR039/01US

**U.S. PATENT DOCUMENTS**

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		Number Kind Code <sup>2</sup> (if known)			
		4,782,327	11/1988	Kley et al.	
		4,769,763	09/1988	Trieb et al.	
		4,750,487	06/1988	Zanetti	
		4,734,685	03/1988	Watanabe	
		4,704,909	11/1987	Grahn et al.	
		4,703,443	10/1987	Moriyasu	
		4,692,756	09/1987	Clark	
		4,689,449	08/1987	Rosen	
		4,688,983	08/1987	Lindborn	
		4,679,331	07/1987	Koontz	
		4,676,002	06/1987	Slocum	
		4,654,648	03/1987	Herrington et al.	
		4,653,011	03/1987	Iwano	
		4,638,798	01/1987	Sheldon et al.	
		4,632,341	12/1986	Repperger et al.	
		4,601,206	07/1986	Watson	
		4,593,470	06/1986	Davies	
		4,571,834	02/1986	Fraser et al.	
		4,550,617	11/1985	Fraignier et al.	
		4,550,221	11/1985	Mabusth	
		4,477,973	10/1984	Davies	
		4,477,043	10/1984	Repperger	
		4,448,083	05/1984	Hayashi	
		4,398,889	08/1983	Lam	
		4,216,467	08/1980	Colston	
		4,148,014	04/1979	Burson	
		4,125,800	11/1978	Jones	
		4,114,882	09/1978	Mau	
		3,944,798	03/1976	Eaton	
		3,890,958	06/1975	Fister et al.	
		3,875,488	04/1975	Crocker et al.	
		3,531,868	10/1970	Stevenson	
		3,490,059	01/1970	Paulsen et al.	
		2,906,179	09/1959	Bower	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		<b>Complete if Known</b>			
		Application Number	09/756,617		
		Filing Date	January 3, 2001		
		First Named Inventor	Louis B. Rosenberg		
		Art Unit	2675		
		Examiner Name	Paul A Bell		
Sheet	7	of	13	Attorney Docket Number	IMMR039/01US

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		EP	0265011	A1	04/1988		
		EP	0607580	A1	07/1994		
		GB	2254911A		10/1992		
		JP	4-34610		02/1992		
		WO	WO9502233		Of 0000		
		WO	WO9532459		Of 0000		
		WO	WO9642078		Of 0000		
		WO	WO9200559		01/1992		
		WO	0626634A2		11/1994		
		WO	WO9502801		01/1995		
		WO	WO9520787		08/1995		
		WO	WO9520788		08/1995		
		WO	WO9616397		05/1996		
		WO	WO9622591		07/1996		
		WO	WO9628777		09/1996		
		WO	WO9720305		06/1997		

Examiner Signature		Date Considered	
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Substitute for form 1449A/PTO		<b>Complete if Known</b>			
		Application Number	09/756,617		
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Filing Date	January 3, 2001		
		First Named Inventor	Louis B. Rosenberg		
		Art Unit	2675		
		Examiner Name	Paul A Bell		
Sheet	8	of	13	Attorney Docket Number	IMMR039/01US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
		Cursor Walso, "Designer's Corner-Useful Technology for Your Idea File," Design News, Mar. 7, 1993, p. 63.	
		"Foot-Operated Mouse," IBM Technical Disclosure Bulletin, Apr. 1986, vol. 28, No. 11.	
		"High Performance Model of the Immersion Probe," Immersion Probe-MD™, Immersion Corporation (1994).	
		"Proceedings of the IFIP Congress 65," International Federation for Information Processing, Information Processing 1965, vol. 3, New York, May 24-29, pp. 506.	
		"The Personal Digitizer.TM.," Immersion Human Interface Corporation 1994.	
		"Useful Technology for Your Idea File," Design News, Mar. 7 1994, pp. 63.	
		3D Human Interface Tool, Immersion Probe.TM., Immersion Human Interface Corporation 1994.	
		Adachi, Yoshitaka et al., "Sensory Evaluation of Virtual Haptic Push-Buttons," Technical Research Center, Suzuki Motor Corporation, Nov. 1994.	
		Adelstein Bernard D. et al., "A High Performance Two Degree-of-Freedom Kinesthetic Interface," Massachusetts Institute of Technology 1992, pp. 108-112.	
		Akamatsu et al., "Multimodal Mouse: A Mouse-Type Device with Tactile and Force Display", Presence, vol. 3, No. 1, Winter 1994, pp. 73-80.	
		Aldstein, Bernard D. et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control Research," 1992, pp. 1-24.	
		Ansley, D., "Thimble gets in touch with reality," New Scientist, 1994, p.19.	
		Atkinson, William D. et al., "Computing with Feeling," Comput. & Graphics, vol. 2, No. 2-E, pp. 97-103.	
		Batter, James J. et al., "Grobe-1: A Computer Display to the Sense of Feel," pp. TA-a-188-Ta-4-192.	
		Bejczy, Antal K., "The Phantom Robot: Predictive Displays for Teleoperation with Time Delay," IEEE 1990, pp. 546-550.	

Examiner Signature		Date Considered	
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**INFORMATION DISCLOSURE  
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Sheet 9 of 13

**Complete if Known**

Application Number 09/756,617

Filing Date January 3, 2001

First Named Inventor Louis B. Rosenberg

Art Unit 2675

Examiner Name Paul A Bell

Attorney Docket Number IMMR039/01US

**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Brooks, F. et al., "Project GROPE-Haptic Displays for Scientific Visualization," Computer Graphics, vol. 24, Number 4, Aug. 1990, pp. 177-185.
		Burdea, Grigore et al., "A Portable Dextrous Master with Force Feedback," Presence: Teleoperators and Virtual Environments, MIT Press, Jun. 1991.
		Burdea, Grigore et al., "Dextrous Telerobotics with Force Feedbacks-An Overview," Robotica 1991, vol. 9.
		Burdea, Grigore et al., "Distributed Virtual Force Feedback," IEEE, May 2, 1993, pp. 25-44.
		Buttolo, Pietro et al., "Pen-Based Force Display for Precision Manipulation in Virtual Environments," IEEE Mar. 1995, pp. 1-8.
		Colgate J. Edward et al., Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces, Sep. 22, 1993, pp. 1-9.
		Ellis, R.E. et al., "Design and Evaluation of a High-Performance Prototype Planar Haptic Interface," ASME Dec. 3, 1993, Dsc-vol. 49, pp.55-65.
		Fischer, Patrick et al., "Specification and Design of Input devices for Teleoperation," 1990.
		Fisher, S.S. et al., "Virtual Environment Display System," ACM Interactive 3D Graphics, Oct. 1986.
		Gotow, J.K., et al., "Perception of Mechanical Properties at the Man-Machine Interface," IEEE 1987, pp. 688-689.
		Hannaford, B. et al., "Force Feedback Cursor Control," NASA Tech Brief, vol. 13, No. 11, Item #21, 1989, pp. i, 1-4.
		Hannaford, Blake et al., "Performance Evaluation of a Six-Axis Generalized Force-Reflecting Teleoperator," IEEE May/Jun. 1991, vol. 21, No. 3, pp. 620-633.
		Hasser, Christopher John, "Tactile Feedback for a Force-Reflecting Haptic Display," The School of Engineering, University of Dayton, Dec. 1995, pp. iii-xii & 1-96.
		Hemdon, J.N. et al., "The State-of-the-Art Model M-s Maintenance System," Proceedings of the 1984 National Topical Meeting on Robotics and Remote Handling in Hostile Environments, American Nuclear Society, pp. 59-65.
		Hirota, K., "Development of Surface Display", IEEE 0-7803-1363, 1993, pp. 256-262.

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Sheet **10** of **13****Complete if Known**Application Number **09/756,617**Filing Date **January 3, 2001**First Named Inventor **Louis B. Rosenberg**Art Unit **2675**Examiner Name **Paul A Bell**Attorney Docket Number **IMMR039/01US****OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		Howe, Robert D., "Task Performance with a Dextrous Teleoperated Hand System," Proceedings of SPIE, Nov. 1992, vol. 1833, pp. 1-9.
		Iwata, H. "Artificial Reality with Force-feedback: Development of Desktop Virtual Space with Compact Master Manipulator", Computer Graphics, vol. 24, No. 4, Aug. 1990, pp. 165-170.
		Iwata, Hiroo et al., Volume Haptization, IEEE 1993, pp.16-18.
		Iwata, Hiroo, "Pen-based Haptic Virtual Environment," Institute of Engineering Mechanics, University of Tsukuba, Japan, pp. 287-292.
		Jacobsen, S.C. et al., "High Performance, High Dexterity, Force Reflective Teleoperator II," ANS Topical Meeting on Robotics & Remote Systems, Albuquerque, New Mexico Feb. 24-27, 1991, pp. 1-10.
		Jones, L.A., et al., "A Perceptual Analysis of Stiffness," Experimental Brain Research 1990, pp. 151-156.
		Kelle et al., "On the Development of a Force-Feedback Mouse and Its Integration into a Graphical User Interface," 1994 Int'l Mechanical Engineering Congress and Exhibition, Chicago, Nov. 1994.
		Kelley, A.J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device," Univ. of British Columbia, Dept. of Electrical Engineering Tech, Report, 1993, pp. 1-27.
		Kilpatrick, P., "The Use of a Kinesthetic Supplement in an Interactive Graphics System", Univ. of North Carolina, 1976.
		Kim, Won S. et al., "Graphics Displays for Operator Aid in Telemanipulation," IEEE 1991, pp. 1059-1067.
		Kim, Won S. et al., A Teleoperation Training Simulator with Visual and Kinesthetic Force Virtual Reality.
		Kotoku, Tetsuo et al., "Environment Modeling for the Interactive Display (EMID) Used in Telerobotic Systems," IEEE Nov. 3-5, 1991, pp. 99-1004.
		Kotoku, Tetsuo, "A Predictive Display with Force Feedback and its Application to Remote Manipulation System with Transmission Time Display," IEEE 1992, Jul. 7-10, 1992, pp. 239-246.
		Krishna Roy, "Virtual Presence Takes Surgeons through the Virtual Keyhole to Hone Their Skills", Business & Industry, Jul. 4, 1995.

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Sheet **11** of **13****Complete if Known**

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Filing Date	<b>January 3, 2001</b>
First Named Inventor	<b>Louis B. Rosenberg</b>
Art Unit	<b>2675</b>
Examiner Name	<b>Paul A Bell</b>
Attorney Docket Number	<b>IMMR039/01US</b>

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		Krueger, Myron W., Artificial Reality 1988, pp. 54-75.
		McAfee, Douglas A., "Teleoperator System/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL Jan. 1988, pp. 3-8, 11, and A-34.
		Meyer, Kenneth et al., "A Survey of Position Trackers," The Massachusetts Institute of Technology 1992, Presence, vol. 1, No. 2.
		Millman, P., "Design of a Four Degree-of-freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," Proc. of the 1991 IEEE Int'l Conf. on Robotics and Automation, 1991, pp. 1488-1493.
		Minsky, Margaret et al., "Feeling and Seeing: Issues in Force Display," ACM 1990, pp. 235-242.
		Noll, A. Michael, "Man-Machine Tactile Communication Dissertation," Polytechnic Institute of Brooklyn, Jun. 1971, pp. 1-88.
		Ouh-young, M. et al., "Creating an Illusion of Feel: Control Issues in Force Display," Computer Science Dept., Univ. of N. Carolina, 1989, pp. 1-14.
		Ouh-young, Ming et al., "Force Display Performs Better than Virtual display in a Simple 6-D Docking Task," IEEE 1989, pp. 1462-1466.
		Ouh-young, Ming et al., "Using A Manipulator for Force Display in Molecular Docking," IEEE 1988, pp. 1824-1829.
		Ouh-young, Ming, "Force Display in Molecular Docking" Chapel Hill 1990, pp. 1-85.
		Precision Machine Design, Slocum, Prentice Hall, pp. 661, 664.
		Ramstein, C. et al., "The Pantograph: A Large Workspace Haptic Device for a Multimodal Human-Computer Interaction," Computer-Human Interaction, CHI '94. 1994.
		Repperger, D.W., "Active Force Reflection Devices in Tele-operation", IEEE Control Systems, 1991, pp. 52-56.
		Rosenberg, L., "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance in Telepresence Tasks", Stanford University, Jun. 1994, pp. 1-214.
		Rosenberg, Louis B. et al., "Perceptual Decomposition of Virtual haptic Surfaces," IEEE, Oct. 1993.

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Filing Date	January 3, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A Bell
Attorney Docket Number	IMMR039/01US

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		Rosenberg, Louis B., "Perceptual Design of a Virtual Rigid Surface Contact," Center for Design Research Stanford University, Air Force material Command, Apr. 1993, pp.1-41.
		Rosenberg, Louis B., "The Use of Virtual Fixtures as Perceptual Overlays to Enhance Operator Performance in Remote Environments," Air Force Material Command, Sep. 1992, pp. 1-42.
		Rosenberg, Louis B., "Virtual Fixtures as Tools to Enhance Operator Performance in Telepresence Environments," SPIE telemanipulator Technology, 1993.
		Rosenberg, Louis B., "Virtual Haptic Overlays Enhance Performance in Telepresence Tasks," SPIE 1994.
		Rosenberg, Louis B., The Use of Virtual Fixtures to Enhance Operator Performance in Time Delayed Teleoperation, Armstrong Laboratory, Mar. 1993, pp. 1-45.
		Russo, Massimo Andrea, "The Design and Implementation of a Three Degree-of-Freedom Force Output Joystick," Department of Mechanical Engineering, May 11, 1990, pp. 9-40 & 96 & 97.
		Schmult, Brian et al., "Application Areas for a force-Feedback Joystick," ASME 1993, DSC-vol. 49, pp. 47-54.
		Smith, Geoffrey, "Call It Palpable Progress," Business Week, Oct. 9, 1995, p. 93, 96.
		Snow, E. et al., "Compact Force-Reflecting Hand Controller," JPL, Apr. 1991, vol. 15, No. 3, Item No. 153, pp. 1-15a.
		Su, S. Augustine et al., "The Virtual Panel Architecture: A 3D Gesture Framework," IEEE 1993, pp. 387-393.
		Tan, Hong Z et al., "Manual Resolution of Compliance When Work and Force Cues are Minimized," ASME 1993, DSC-vol. 49, pp. 99-104.
		Tan, Hong Z. et al., "Human Factors for the Design of Force-Reflecting Haptic Interfaces," Tan, Srinivasan, Eberman, & Chang, ASME WAM 1994, pp. 1-11.
		Wiker, Steven F. et al., "Development of Tactile Mice for Blind Access to Computers: Importance of Simulation of Locus, Object Size, and Vibrotactile Display Resolution," Proceedings of the Human Factors Society 35 <sup>th</sup> Annual Meeting 1991, pp. 708-712.
		Winey III, C., "Computer Simulated Visual and Tactile Feedback As An Aid to Manipulator and Vehicle Control", MIT, 1981, pp. 1-80.
		Yamakita, M. et al., Tele-Virtual Reality of Dynamic Mechanical Model, IEEE Jul. 7-10, 1992, pp. 1103-1110.

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		Yokokohji et al., "What You Can See is What You Can Feel -Development of a Visual/Haptic Interface to Virtual Environment", Proceedings of VRAIS '96, IEEE 1996, pp. 46-54.	

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